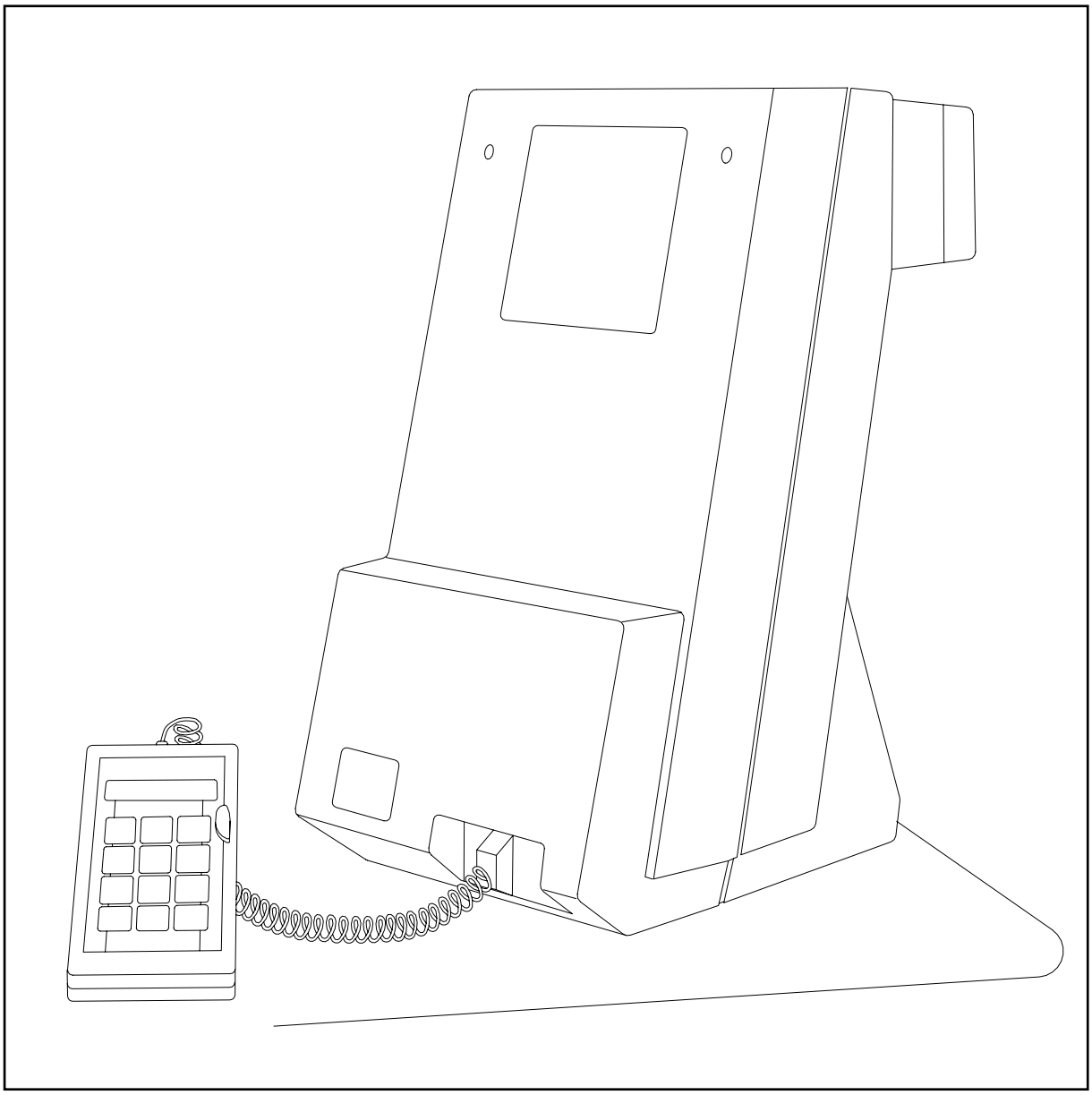

Mesotest II b

Instruction Manual

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OCULUS

G/62800/0607/e

0. Foreword

Thank you for the confidence which you have placed in us by buying this OCULUS product. With this unit you have made your decision for a modern, thoroughly thought-out product which has been manufactured and tested according to the highest quality standards.

Ongoing research and development at OCULUS, which are certainly in your interests as well, may lead to changes in the design and scope of standard equipment.
The illustrations shown in this Instruction Manual may therefore differ in some respects from the unit as delivered.

Our company can look back on a history extending more than 100 years into the past. OCULUS today is a medium-sized company whose only focus is to support physicians and optometrists in their demanding work with a line of top-quality products for ocular examinations and operations.

Your Mesotest II is a free-space unit for testing mesopic vision and glare sensitivity.
In the early 1960s, OCULUS cooperated with the University Eye Clinic in Tübingen to develop and build the world's first unit for testing mesopic vision and glare sensitivity.
At the beginning of the 1980s, this unit was further developed even with the help of a new optical system.
The latest generation, the Mesotest II, has been further improved by the application of a new functional principle. The use of an electronic control system has made it possible to substantially streamline the unit's use and operation, which can now optionally be carried out from a PC. This also permits the processing of patient data and examination results.
The instrument´s weight has also been greatly reduced, facilitating mobile use.

Proper use is indispensable for safety in working with the unit. Therefore, please familiarize yourself thoroughly with the contents of this Manual before using the unit for the first time.
Should you have questions or desire further information on your unit, give us a call or send us a telefax message. Our service team will be happy to help.

OCULUS Optikgeräte GmbH -
The Management and Staff

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2. Standard Equipment List

- Mesotest II
- Control unit with LCD module and work area illumination
- Mains cable
- Instruction Manual
- Notepad for test results (100 pages)
- Dust cover
- Metal covering for viewing aperture

If you have also acquired the software module (cf. Chapter 10.3.), please see the separate Instruction Manual for this product and its accessories.

Right reserved to change the scope and design of standard equipment when technical development so requires.

3. Safety Precautions

The manufacturer is required by law to inform the user explicitly on safety aspects involved in dealing with this unit. This chapter contains a summary of the most important points to be noted regarding technical safety.

Other safety precautions are found in the text of this Instruction Manual and are designated by

Please pay special attention to these instructions as well.
Store this Instruction Manual with care in a place where it is accessible for persons using the unit at all times; also, give due attention to Instruction Manuals of the unit's other accessories as required.
The unit may only be used for its intended purpose, as described in this Instruction Manual (chapter 5), and by persons whose proper use of the unit is ensured by their training and practical experience.

Use the unit only with original parts and accessories delivered by us and in a technically flawless condition. Do not attempt to use a damaged unit, but contact your supplier.

Please abide by accident prevention laws where applicable, and be especially careful to observe the instructions and information printed on the unit.
The unit may be used in medical areas only if these rooms are equipped according to VDE norms or the equivalent (Association of German Electrotechnical Engineers).

Always disconnect all mains plugs from their power outlets before carrying out maintenance or cleaning work.
Disconnect the mains plug at once if you notice smoke, sparks, or unusual sounds coming from the unit. Do not use the unit again until the problem has been corrected by our service personnel.
Do not connect electrical plugs and sockets by force. If it is not possible to connect them, verify whether the plug is correct for the socket. If you find damage in either the plug or the socket, have them repaired by our service personnel.

Do not disconnect electric plugs from their sockets by pulling on the cable, but rather on the plug.

Auxiliary equipment connected to the analog or digital interfaces of the unit must have proven compatibility with the EN and/or IEC specifications of these interfaces. Furthermore, all configurations must meet IEC Systems Norm 601-1.

Do not attempt to configure electro-medical systems by combining the Mesotest II with non-medical electrical equipment (e.g. data processing equipment) if this might reduce the level of patient safety below that recommended by IEC Norm 601-1. Where permissible levels for leakage current may be exceeded due to such combinations, protective disconnecting devices must be present.

Do not use the equipment named in the Standard Equipment List in the following situations:
- Where there is danger of explosion.
- In the presence of flammable anesthetics or volatile solvents such as alcohol, benzine or the like.

Do not store or use the unit in damp rooms. Avoid placing the unit near dripping, gushing, or splashing water, and make certain that no fluid can enter the unit. For this reason, please do not place any containers full of liquid on top of the unit, and also take care when cleaning the unit with a damp cloth that no fluid gets into the unit.
Do not cover the ventilation openings.

This unit is a high-quality technical product. To ensure that it performs flawlessly and safely, we recommend having the unit inspected regularly every two years by our service personnel. Should any problem arise which you cannot solve using the enclosed checklist of errors, label the unit "Out of Order" and contact our service department.

4. Description of the Unit and Its Functions

4.1. Components of the Unit

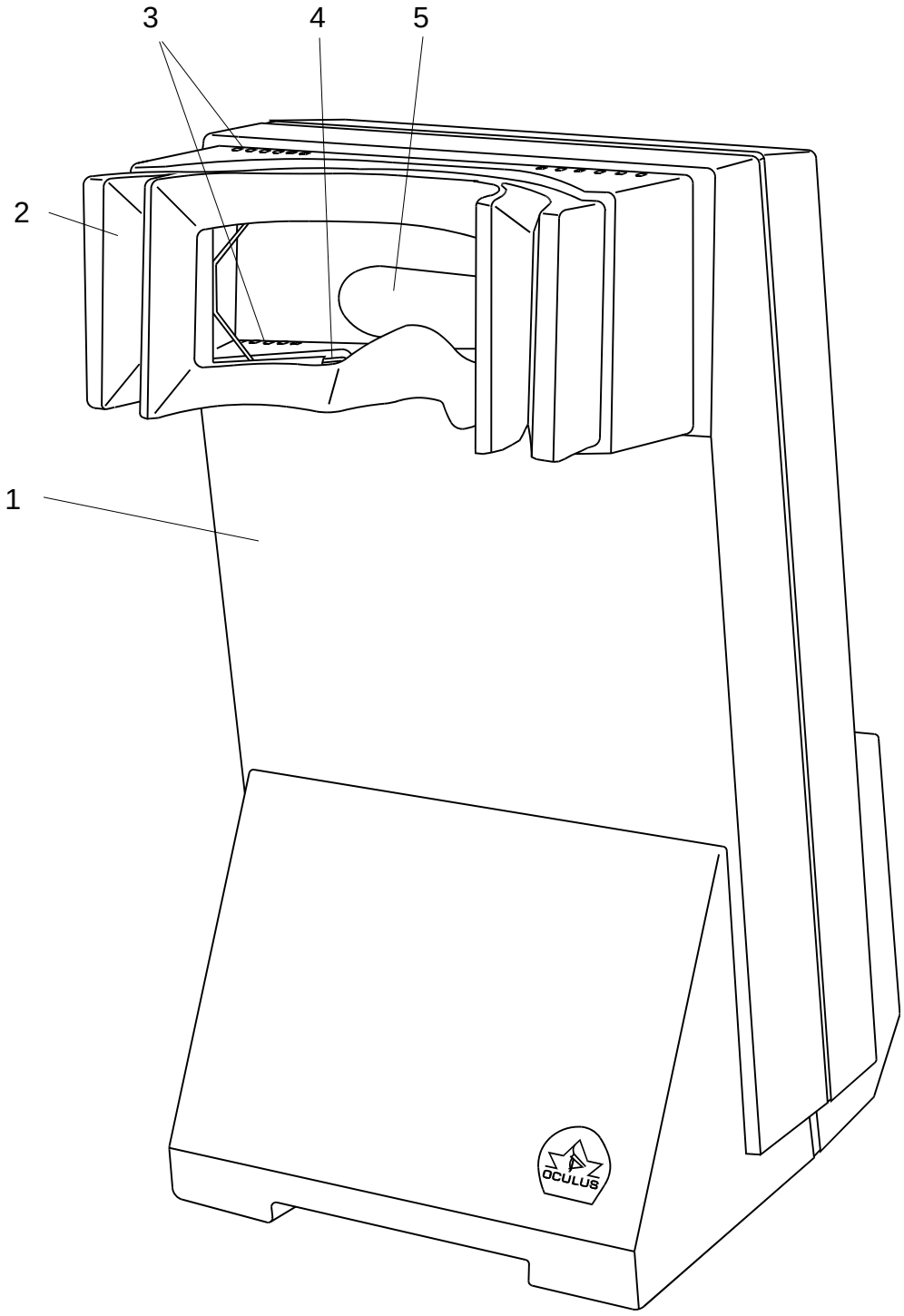


Figure 1 - Mesotest II, front view

No.1 - Front shell of the housing
No.2 - Lining of the viewing aperture
No.3 - Ventilation openings
No.4 - Clip spring
No.5 - Viewing aperture

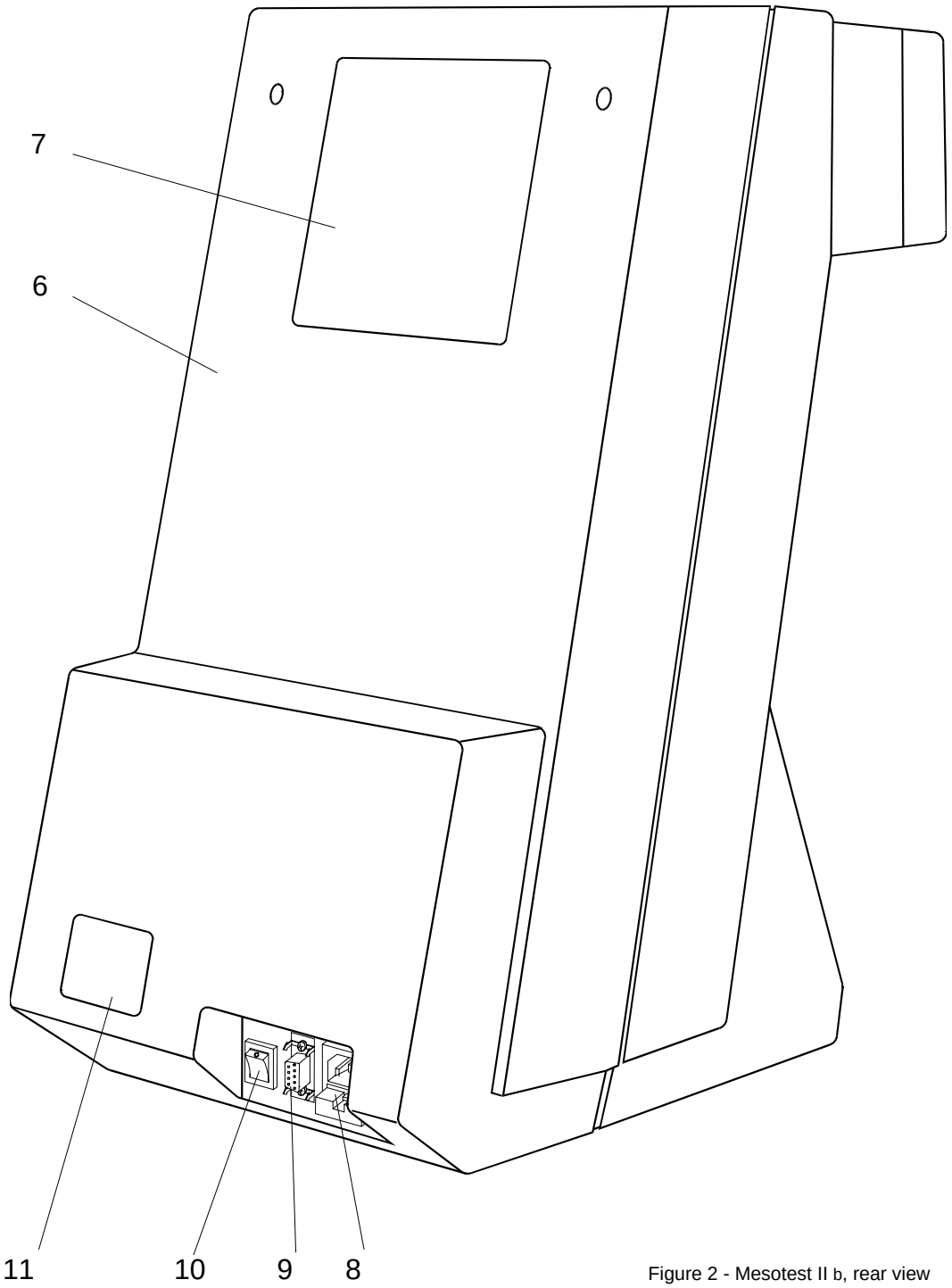


Figure 2 - Mesotest II b, rear view

No.6 - Rear wall of housing
No.7 - Tinted window
No.8 - Mains plug with fuse holder
No.9 - Socket of the serial interface
No.10 - Mains switch
No.11 - Type plate

4.2. Description of the Unit

Tests for mesopic vision and glare sensitivity are an important supplement to tests of photopic visual acuity, especially when evaluating the ability to drive at night. Pre- and postsurgical examination is also to be recommended for patients undergoing IOL or refractive surgery, or when tinted lenses are prescribed.

The Mesotest II is a PD-independent, free-space unit for testing mesopic vision and glare sensitivity.

"Free-space" means that the test objects appear under natural visual conditions. Instrument myopia is eliminated for the most part, since the eyes accommodate and converge as in normal vision.

The comfortable, cushioned lining around the viewing aperture ensures freedom of viewing and optimum adjustment for all examinees. The complete elimination of light from other sources ensures correct examinations even when room conditions are only moderately dark.
The ventilation openings of the viewing aperture lining ensure that condensation cannot cloud the examinee's glasses or the unit's occluder.

The test is carried out with optotypes of different contrast levels. These optotypes are presented in front of a low-brightness backdrop.
The light intensity of the backdrop is 0.032 cd/m2 without and 0.10 cd/m2 with glare.
This corresponds to the brightness of automobile traffic at twilight or at night.

Landolt rings acc. to DIN Norm No. 58220-T1 are used as optotypes. Since visual acuity decreases with decreasing brightness, acuity level 0.1 is used. The optotypes can be presented in six different positions, and one position is preselected automatically at the beginning of each test.

The Landolt ring positions which are available for selection are:

LO - Top Left
O - Top
RO - Top Right
LU - Bottom Left
U - Bottom
RU - Bottom Right

Four different contrast levels are available. They are:
1:23 / 1:5 / 1:2,7 / 1:2.
Here contrast level 1:23 corresponds to the highest contrast, i.e. this level is the most easily recognized.
Contrast 1:23 is the ratio between light intensity of the optotypes and the backdrop.

The contrast levels are presented in each case with and without glare (=BLEND). This results in a total of eight tests which run successively during the course of a test routine.
Table 1 shows the course of the test routine.

Table 1

Test-No.	1	2	3	4	5	6	7	8
Contrast	1:23	1:5	1:2,7	1:2	1:23	1:5	1:2,7	1:2
Glare	Off	Off	Off	Off	On	On	On	On
Automatic Land.sett.	LO	RO	O	U	RU	U	LU	O

The viewing screen of the test panel is seen through an optical system via a semitransparent viewing mirror. The optotypes are presented in front of this viewing screen. Their virtual image appears at a distance of 5 meters from the eye.
The optotypes are vacuum metallized onto a glass disk. The projection disk is manufactured to very tight tolerances for the various contrast levels.

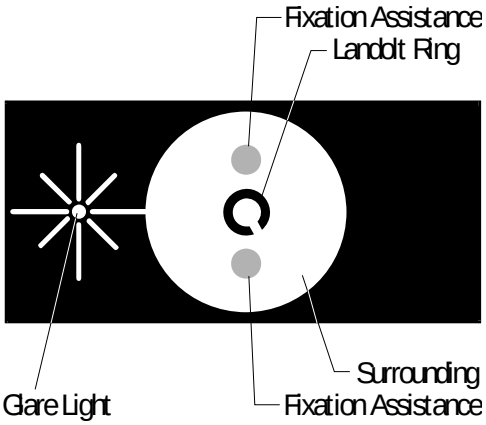


Figure 3 - Test panel

The glare light source is situated at the left, next to the test panel, at a visual angle of 3° (cf. Figure 3). It is activated automatically in accordance with test selection.
The glare light source simulates glare created by an oncoming vehicle with its headlights on dipped beam. The glare intensity is 0.35 lux at the pupils.

The light sources are two white LED´s, one for the surrounding and one for glare.

A stand-by function switches the illumination off whenever there has been no operating input for a certain period of time.

A projection device above the test panel assists in fixation. It can be used to project two red dots onto the test panel (cf. Figure 3).
This fixation assistance is turned off automatically when the next test or optotypes appear.

The Mesotest II is available with 3 sets of minus lenses as an option. These make it possible to determine the presence of night myopia and thus to compensate for this form of myopia, i.e. to improve nocturnal vision as far as possible.
An integral part of this option is the possibility of monocular examinations.

4.3. Description of the Control Unit

-0,5 Landolt ring position: Top Left (LO)
2nd function: interpose -0.5 D minus lenses (Option)

-1,0 Landolt ring position: Top (O)
2nd function: interpose -1.0 D minus lenses (Option)

-1,5 Landolt ring position: Top Right (RO)
2nd function: interpose -1.5 D minus lenses (Option)

Landolt ring position: Bottom Left (LU)

Landolt ring position: Bottom (U)

0 Landolt ring position: Bottom Right (RU)
2nd function: reset minus lenses to 0 D (Option)

FIX Turns Fixation Assistance on and off

R/L/BIN Select an eye for Examination
(Option)

-DFT. Activitates 2nd function (minus lenses)

START STOP Next patient, or stop current tests and return to beginning

TEST < Return to previous test

TEST > Proceed to next test

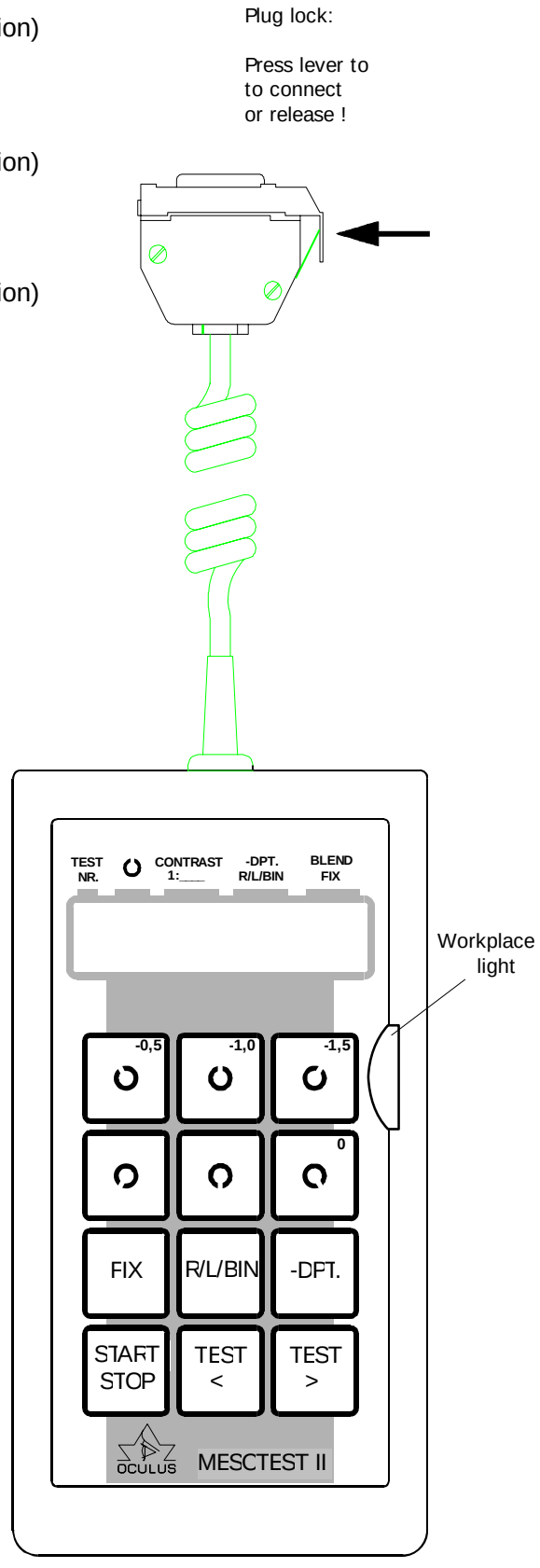


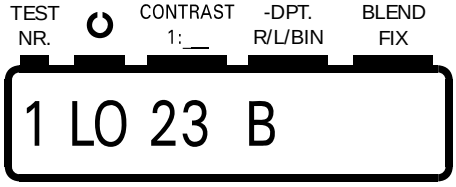
Figure 4 - Control unit

The Mesotest II is operated via the external control unit and the illuminated LCD module (Figure 4). The control unit has its own work area illumination to permit note-taking in darkened rooms.

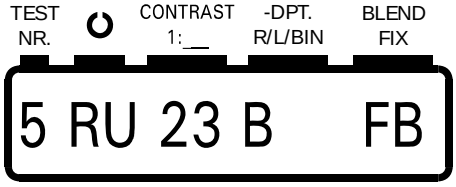
The unit can also be controlled from a PC by means of an optional software module.
In this case, it is not the control unit but rather the PC which is connected to the serial interface of the Mesotest II.

Following are a few displays which are possible on the LCD module:

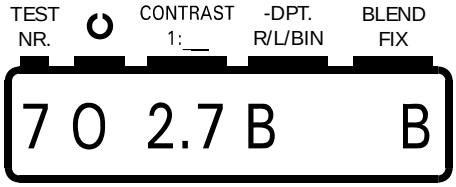
Test No. 1: Display after the unit is turned on
B: Binocular examination



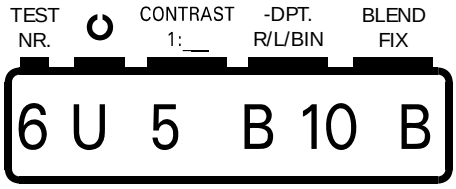
Test No. 5: B: Binocular examination
F: Fixation assistance: On.
B: (=BLEND) = Glare: Active



Test No. 7: B: Binocular examination
B: (=BLEND) = Glare: Active



Test No. 6: -1.0 D minus lenses are interposed (Option)



Test No. 4: R: Monocular examination of the right eye (Option).

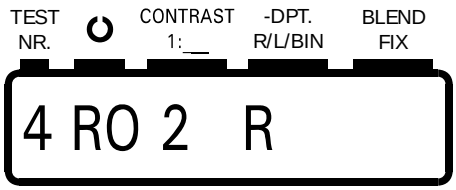
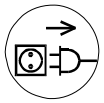


Figure 5 - Sample displays of the LCD module

4.4. Warning Signs and Labels on the Unit.



Caution! Disconnect the mains plug before opening the unit.

Caution! See the enclosed information sheets.

.

5. Appropriate Use

This unit is designed only for the purposes described in this Instruction Manual. It is designed for testing visual performance of the human eye in the mesopic range.
This unit may be used only by persons whose training and practical experience ensure that they will work with the unit in an appropriate manner.
Operate the unit only with original parts and accessories delivered by us and in a technically flawless condition.
Run the unit only on an electric power supply system whose supply voltage is within the voltage range given on the rating plate.
Please abide by the safety precautions given above.

6. First Use of the Unit

6.1. Before First Use

Please remove the unit and its accessories from their packing and store the latter. You can then send or transport the unit correctly should service or repairs ever be required.

Before connecting the unit to the electric power supply system, check whether the supply voltage of the electric power supply system is within the range given on the rating plate.

This optical unit is to be handled with care. Do not subject it to shocks, impacts, dirt or high temperatures.

6.2. Installation and Adjustment

The Mesotest II should be set up in a moderately bright or moderately darkened room (room brightness between 2 and 5 lux).

For example, if the unit must be set up in a bright room due to lack of available space, the tinted window of the unit should be closed with the enclosed metal covering in order to avoid falsification of the examination results.

Proceed as follows to install this covering (cf. Figure 6):
- Insert the metal covering on either side into the slit between the viewing aperture and the housing.
- Hold the metal firmly by the recessed grips with one hand.
- Bend the metal with the other hand and let it snap into the opposite slit.

To remove the metal covering, simply grasp the recessed grips and pull it out.

However, closing the light admission opening of the unit increases the risk of instrument myopia. This must be taken into account when evaluating the examination results.

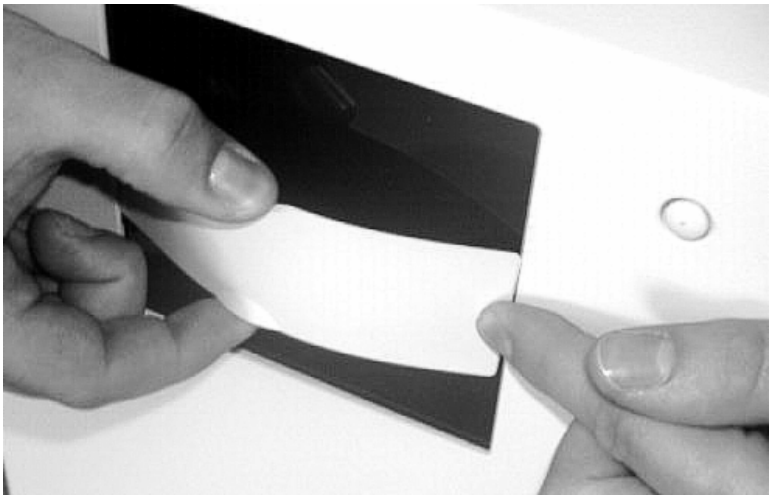


Figure 6 - Installing the metal covering

Avoid the vicinity of heating units or sources of moisture which might enter the unit.

To put the unit into operation for the first time, connect the control unit (or the serial cable of the PC) to the socket (Figure 2, No. 9).

Connect the mains cable (to No. 8 in Figure 2).
Switch on the mains switch (Figure 2, No. 10). The unit is ready for use after a brief, automatic self- test.
The LCD module, the work area light, and the light in the mains switch light up to show readiness for use.

6.3. Instructions for Transport and Storage

A carrying bag is available for purposes of transportation, e.g. for mobile use. If you have decided not to acquire this, please transport the unit only in its original packing in order to avoid unnecessary damage and expenses.

Avoid shocks when relocating the unit, since they can have a negative effect on calibrations.

Inspect the unit for damage after every relocation. Do not under any circumstances attempt to use a damaged unit, but please contact our service personnel.
If you keep the unit in an automobile during the cold season of the year, its optical components may become fogged with condensation after being brought into much warmer surroundings.
Please give the unit time to adjust to the new surroundings before turning it on.
The conditions prescribed for transportation and storage by IEC Norm 601-1 are:
- Surrounding temperature: -40° C to +70°C.
- Relative humidity: 10% to 100% including condensation.
- Air pressure: 500 hPa to 1060 hPa

If the unit is kept in its corresponding packing, these values apply for a period of 15 weeks maximum.

7. Operating the Unit

7.1. Before Each Use

Please inspect the unit prior to each use to make sure that:

- The unit is in flawless technical condition.
- All cables and plugs are free of defects.
- You have connected the unit with the mains cable which is intended for the unit.
- You have inserted the mains plug into a power outlet with a flawless protective earth conductor.

7.2. Preparation of the Examinee

The eyes of the person to be examined must be adapted to darkness for ca. 5 minutes before the examination.

This poses no problem if the Mesotest II has been set up in a darkened room. If it has been set up in a brightly lit room, the examinee has to be adapted by having him look into the unit for a corresponding period of time.

If the person being tested wears spectacles or contact lens, the examination is then carried out with the spectacles or contact lenses.
This should be noted on the test form sheet (also the presence of tinted lenses, if any).

7.3. The Examination Procedure

Turn on the unit. After carrying out an automatic calibration, the Mesotest II begins Test No. 1.
A specific Landolt ring setting is pre-selected for each test (cf. Table 1, Page 8). Test 1, with contrast level 1:23, is the most easily recognized and can therefore be used to instruct the examinee.

After giving instructions, show the examinee at least 5 different Landolt ring positions. You can select these as desired with the ↻ - keys. The visual requirements are regarded as fulfilled when the examinee has recognized at least 3 of 5 positions (60% criterion). Mark these correspondingly on the form sheet (No. 62855, cf. Figure 7).

Pressing the **TEST>** key as often as required brings you to each subsequent test (Nos. 2 to 4), with contrast levels 1:5, 1:2,7 and 1:2. The contrast diminishes with each test. Level 1:2 is the most difficult to recognize.
In presenting the Landolt ring positions, proceed as during the first test. Mark these results on the form sheet as well.
In case of uncertainty, the previous test can be repeated by pressing the **TEST<** key.

Tests 5 to 8 are presented at the same contrast levels as tests 1 to 4, but in brighter surroundings and with continuous glare.

Before continuing the examination with Test No. 5, turn on the fixation assistance with the **FIX** key. Ask the examinee to direct his gaze between the two red lights.

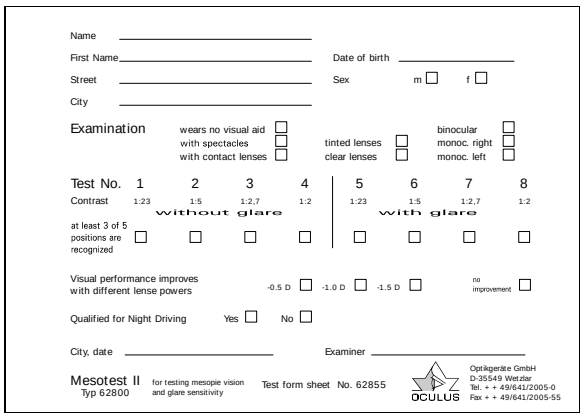
If the examinee does not do this and looks directly into the glare light source during the change to Test No. 5, he will recognize no optotypes at first. This can cause a delay in the examination, since he requires some time (ca.10-30 seconds) for readaptation.

You can turn the fixation assistance off again with the **FIX** key. However, it is automatically turned off after each change of tests or optotypes in order to prevent a falsification of the examination results.
Now press the **TEST>** key again.

Carry out the rest of the tests (Nos. 5 to 8) in the same manner as Nos. 1 to 4.
Fill out all other spaces on the test form sheet.

In order to start the examination again, e.g. for a new patient, press the **START/STOP** key. The program then restarts with Test No.1.

Figure 7 - Test form sheet No. 62855 (reduced in scale)



The unit switches to "Standby" whenever ca. 7 minutes have elapsed with no change in settings. Press any key to turn the illumination on again.

If you have interrupted the examination, show the examinee a different Landolt ring position or a different test after taking up the examination again.

7.4. Additional Examinations

Provided that your Mesotest II is equipped with minus lenses and an eye cover, you have the option of carrying out additional examinations.
You can use the minus lenses to determine whether night myopia is present.
Activate the minus lenses for the last test number which the examinee just barely recognized.

To interpose a minus lens, first press the -**DPT**.- key, then the key with the desired lens power (marked in red on the control unit).
If the examinee's visual performance improves, night myopia is possibly present and should be corrected with a corresponding visual aid.

The degree of night myopia can be determined by interposing different lens powers (-0.5/-1.0/-1.5 D).

The eye cover also permits monocular examinations to be carried out.
This is very important, e.g. for IOL patients or excimer laser patients.
To swing the eye cover into place, press the **R/L/BIN** key on the control unit. The cover is advanced farther each time the key is pressed. The screen display shows which eye is being examined (R / L / B).

7.5. Evaluation of Results

The test with the least contrast which is still correctly recognized constitutes the basis for evaluating visual performance.

For the evaluation of the **ability to drive at night** the German Ophthalmological society (DOG) gives following recommendations:

Driver's licence in classes: A, A1, B, BE, M, L and T
without glare: contrast level 1 : 5 (Test 2)
with glare: contrast level 1 : 5 (Test 6)

Driver's licence in classes: C, C1, CE, C1E, D, D1, DE, D1E and passenger transport
without glare: contrast level 1 : 2,7 (Test 3)
with glare: contrast level 1 : 2,7 (Test 7)

Minimum requirements concerning the mesopic vision and glare sensitivity according to “**Berufsgenossenschaft Principle G 25**” (Berufsgenossenschaft: Institution for Statutory Accident Insurance and Prevention):

Requirement level 2 (only for increased requirement)
without glare: contrast level 1 : 5 (Test 2)
with glare: contrast level 1 : 5 (Test 6)

Requirement level 1 (only for increased requirement)
without glare: contrast level 1 : 2,7 (Test 3)
with glare: contrast level 1 : 2,7 (Test 7)

As a test criterion you must operate with a criterion to interrupt just like the DIN 58220 (visual acuity). 3 out of 5 test-signs must be recognized correctly.

Mark an "X" in the proper space on the "Qualified for Night Driving" line of the form sheet. If appropriate, also give the desired driver's licence class.

7.6. After Each Use

Turn off the unit after using it, and use the dust cover to protect it against foreign matter.

8. Maintenance

8.1. Care, Cleaning and Disinfection

General Remarks

Disconnect the mains plug before cleaning the unit!

Always observe the product descriptions and instruction manuals for any agents and equipment which are used in caring for, cleaning, and disinfecting the unit or its accessories.
Do not use agents which are aggressive, contain chlorine, are abrasive, or may attack the finish of the unit.

Cleaning Painted Surfaces and the Housing

Take care that no cleaning agents get inside the unit.
In general, we recommend the use of a cleaning agent with antistatic action for plastic surfaces (to reduce subsequent static attraction of dust particles).
Otherwise, clean the outer surfaces of the unit by wiping them with a damp cloth.
If there are residues, you can wipe them off with a mixture of equal parts of alcohol and distilled water. You can also add a few drops of a standard commercial dishwashing liquid to this fluid.

Cleaning the Glass of the Viewing Aperture

Soiling caused by dust or fingerprints may affect the examination. You can clean the glass of the viewing aperture with a soft cloth or an optical brush, using alcohol or a lens cleaner if necessary.

Cleaning and disinfecting the lining of the Viewing Aperture

You can clean the lining of the viewing aperture with mild soapsuds.
We recommend alcohol or spirits for disinfecting it.
The lining of the viewing aperture should be replaced in case of intense soiling (cf. Chapter 8.3).

8.2. Replacing the Viewing Aperture Lining

The lining of the viewing aperture consists of an elastic material. There is a slot on its outer edge which slips onto the front frame of the unit's casing. The lining of the viewing aperture is reinforced on the inside with a wire clip spring to stabilize its shape.

The unit can be laid on its back in order to replace the lining of the viewing aperture.

Caution! Disconnect the mains plug before tipping the unit.
Be sure to lay the unit on a soft surface.
Caution! Be careful not to damage the glass of the viewing aperture when installing the new lining of the viewing aperture.

In order to replace the lining of the viewing aperture, first remove the clip spring (Figure 10 a).
To do this, grasp the clip spring successively by both of its rounded ends and unhook the ends of the spring upwards out of the rubber holder. Then pull the clip spring completely out of the upper guide slot.

Now press the lining of the viewing aperture out of its guide slot and pull it out, starting on one side (Figure 10 b).

The replacement is carried out in the reverse order:

Compress the lining of the viewing aperture vertically and insert it into the frame of the casing. Beginning from either side, press the slot of the viewing aperture lining into the frame. Take care not to bend the small ventilation openings at the back.

With the continuous spring uppermost, place the clip spring into its guide slot (Figure 11). Take care that the spring is completely in the slot.
Then grasp both rounded ends of the clip spring one after the other and hook them again into the groove at the bottom.

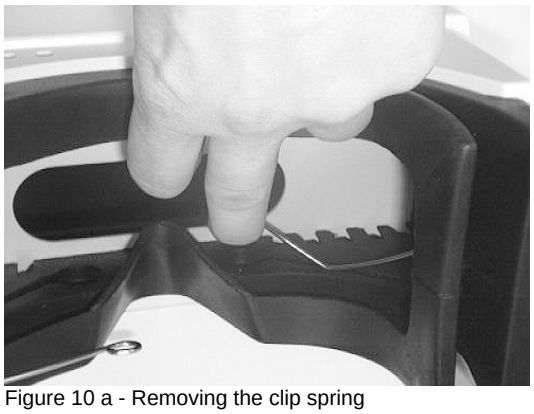


Figure 10 a - Removing the clip spring

Figure 10 b - Removing the lining of the viewing aperture

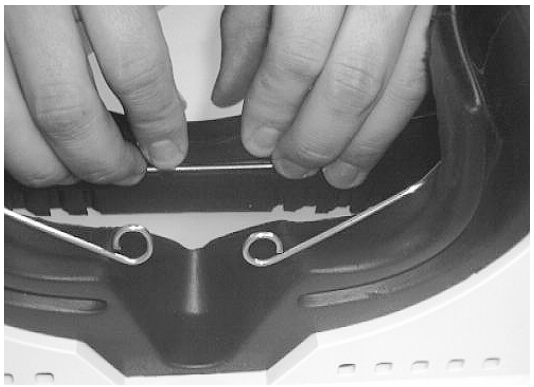


Figure 11 - Inserting the clip spring

8.3. Replacing Fuses

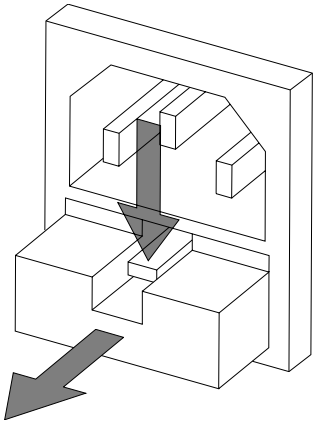


Figure 12 - Mains plug with fuse drawer

Disconnect the mains plug before replacing the fuses!
Replace only with a fuse of type T 400 mA. A repeated blowing of the fuses indicate an internal fault of the Mesotest II.
Please clearly mark the unit as non-operational and contact our service personnel.

The two fuses of the unit are located in a small fuse drawer which is built into the mains input connector.
To open the drawer, grasp the small grip on its top and pull the drawer out towards the back.
For replacements, use only the fuse type given on the rating plate. Press the drawer back into place until the grip of the drawer snaps into place again.

8.4. Replacing the Work Area Light.

Figure 13 - Work area light.

The bulb of the work area light has a long working life. Should it ever burn out, however, replacement is very easy.

The bulb is replaced as a unit with its plastic socket, which also serves as a light shade. Simply remove the light by pulling it upwards. Take care not to bend the contact wires of the bulb when inserting the new light.
Guide the contact wires of the bulb and the plastic nipples of its mounting into their holes and push in the light until it is seated.

8.5. Solving Problems and Malfunctions

If a problem occurs which you cannot solve with the Troubleshooting Table below, label the unit as "Out of Order" and contact our service personnel.

Problem	Possible cause	Solution
No reaction when the mains switch is turned on.	The Mesotest II is not connected to the power mains.	Insert the mains cable into the power outlet or into the input connector of the Mesotest II.
	Power failure, or the power outlet is inactivated.	Contact your house electrician.
	The control unit or the serial cable of the PC is incorrectly connected.	Check whether the plug is connected correctly.
	The fuses of the unit are defective.	Exchange the fuses (cf. Chapter 8.3).
	The unit was switched off and on again too quickly.	Wait 5 seconds between switching the unit off and on.
The examinee says that he does not recognize anything.	The unit is in Stand-by Mode.	Press any key of the control unit.
	The examination room is too brightly illuminated.	Darken the room or cover the tinted window with the enclosed metal cover.
The work area light fails to light up.	The light bulb is defective.	Replace it (cf. Chapter 8.4).
R/L/BIN and - DPT. do not function with correct minus lens values but are nevertheless displayed in the LCD.	Optional equipment has not been installed in the unit.	

8.6. Maintenance: Description and Intervals

The Mesotest II has been built in such a way that no special maintenance is required.

To be certain, however, we recommend an inspection of the photometric values every 2 years. Contact your OCULUS service personnel for this purpose

9. Disposal

Have the packaging disposed of as recyclable waste.
When the device has reached the end of its service life it has to be disposed of properly:
The metal parts of the device should go to scrap yard.
Plastic components, electrical components and circuit boards should be disposed of as scrap electronics.

Batteries should be disposed of as special waste.

Materials should be disposed of according to the laws of your country.
Please use the services of suitable waste disposal companies.
Ask your town or municipal administration for information about local waste disposal companies.

10. Terms of Warranty and Service

10.1. Terms of Warranty

With the purchase of this instrument you have chosen a high-quality product from OCULUS. Your instrument has been manufactured with great care using high-grade materials and state-of-the-art production technology. Any software delivered with this product has been tested by OCULUS and confirmed to comply with current technical standards. Please be sure to read the operating manual as well as all safety instructions before initial use and to observe them when using the instrument.

This instrument is provided with a warranty in accordance with the legal regulations.

Any manipulation of the device by unauthorized persons voids all warranty claims, since improper alterations or attempts at repair can create considerable hazards for users as well as patients.
Any manipulation by unauthorized persons of PC hardware or software included in the delivery likewise voids all warranty claims.

Please report any transport damage to the shipping agent immediately upon or after delivery and have this confirmed on the freight bill so that any claims can be duly settled.

In general our General Business and Delivery Terms as amended at the date of purchase shall apply.

10.2. Liability for Malfunction or Damage

OCULUS considers itself responsible for the safety, reliability and functionalism of the unit only if the unit is used in accordance with this Instruction Manual.

The unit contains no parts (except the light bulb), which require maintenance or repair by the user.
No liability whatever is possible on the part of OCULUS if assembly work, additions to the unit, readjustments, maintenance work, alterations, or repairs are carried out on the unit by non-authorized persons or if the unit is improperly cared for or handled.

If the above-mentioned work is carried out by authorized persons, these persons must be requested to provide a certification of the type and extent of their repair work, including details on changes made in the ratings or the capacities of the unit if required. The certification must bear the date on which the work was carried out as well as the name of the service company and must be signed.
If desired, OCULUS will provide authorized persons with circuit diagrams, replacement parts lists, additional descriptions, and adjustment instructions for this purpose.

Use only original parts from OCULUS for repairs.

10.3. Manufacturer's and Service Address

You can receive additional information from our service department or from our authorized representatives.

Manufacturer's and Service Address:
OCULUS Optikgeräte GmbH
Münchholzhäuser Str. 29
D - 35582 Wetzlar
Tel.:++49 / 641 / 2005-0
Fax:++49 / 641 / 2005-255
e-mail = sales@oculus.de

OCULUS

11. Appendix

11.1. Literature References

- Aulhorn, E. und Harms, H.: Über die Untersuchung der Nachtfahreignung von Kraftfahrern mit dem Mesoptometer Klin.Mbl. für Augenheilkunde 157/1970, 843-873, F. Enke-Verlag, Stuttgart

- B. Lachenmayr, Annemarie Buser und Susanne Müller:
  Welche visuelle Information benötigt der Kraftfahrer für die sichere Teilnahme am Straßenverkehr?
  Ophthalmologie (1994) 91: 383-394
  © Springer-Verlag 1994

- Nolte, W., (1962), Die Leuchtdichteverhältnisse im Straßenverkehr als Grundlage für die Augenuntersuchung von Kraftfahrern.
  Ber Dtsch Ophthalmol Ges 64: 543-547

- Empfehlung der Deutschen Ophthalmologischen Gesellschaft zur Fahreignungsbegutachtung für den Straßenverkehr DOG, Heidelberg 1996

- DIN 58220-T1; März 1988; Sehschärfebestimmung, Normsehzeichen,
  Beuth-Verlag, Berlin

11.2. Declaration of Compliance

We hereby declare as sole proprietor that this product complies with the following norms or normative documents:

- EN 60601-1 Medical electrical equipment; General requirements for the safety, 05/1994
- EN 60601-1-2 Collateral Standard: Electromagnetic compatibility, 09/1994

in accordance with the directives of Guideline 93/42/EWG for Medical Products.

Dipl.Ing. Rainer Kirchhübel

Managing Director
OCULUS Optikgeräte GmbH

11.3. Order Information, Accessories, Replacement Parts

62800	Mesotest II
62801	Mesotest II Type 62800 with 3 additional sets of minus lenses and an eye cover
62802	Carrying bag
62855	Set of 10 test note pads
6280006004	Light (spare light bulb for workplace light)
6280000001	Dust cover
6280001003	Lining of the viewing aperture
6280001007	Clip spring (for the viewing aperture lining)
05100090	Fuse 0.4 AT
62803	Software module for IBM-compatible PCs for recording examinations and controlling the Mesotest II, incl. interface cable.

Diverse electrically operated elevation platforms on request.

11.4. Technical Data

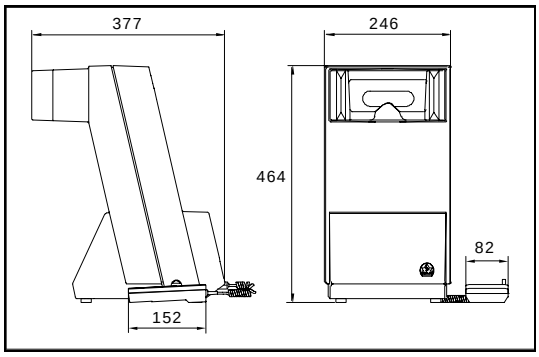
Mains connection
100 - 240 VAC
50 - 60 Hz
35 VA

Fuses
2 x T 0,4 A - 250 V

Weight
7.8 kg incl. control unit and mains cable

Light sources
White LED´s
One for surrounding and one for glare

Dimensions
WxDxH 246 x 377 x 464 mm
Control unit WxDxH 82 x 152 x 45 mm



Mode of operation:
Via an external control unit with LCD and integrated work area lighting.
Connection via cable to a serial interface, all adjustments are carried out by a motor.
Option: Operation via PC.

Test distance:
5 m

No. of tests:
8 tests (4 with and 4 without glare);
6 different, freely selectable Landolt ring positions.

Optotype carrier:
Permanently installed glass disc.
Optotypes:
Landolt rings, visual acuity 0.1
4 contrast levels: 1:23 / 1:5 / 1:2,7 / 1:2

Fixation assistance:
Via 2 light diodes, can be turned on at any time.

Unit viewing aperture:
Elastic lining to seal off distracting room light, made of material which is pleasant to the touch, with ventilation, appropriate for all head sizes.

Window of the unit:
Via a semitransparent mirror through a tinted window in free space, used to avoid instrument myopia.

Photometric data:
Brightness of surroundings:
Without glare: 0.032 ±0.003 cd/m2
With glare: 0.10 ± 0.01 cd/m2
Glare light source: 0.35 ± 0.03 lux
Angle of glare: 3°

Minus lenses:
Optional, for ascertaining the presence of night myopia, with 3 sets of minus lenses:
-0.5 D / -1.0 D / - 1.5 D
Can be swung into position by motor, with integrated eye cover for monocular examinations

IEC 601-1 Classification:
Type of protection against electrical shock: Safety class 1
Degree of protection against electrical shock: Type B
Degree of protection against entry of water: IP 20

Operating conditions:
Temp.: +10°C to +40°C
Humidity: 30 % to 75 %
Air pressure: 700 hPa to 1060 hPa

We reserve the right to make changes necessitated by ongoing technical development.